

NABL ACCREDITED AS PER ISO/IEC 17025:2005

Job No.: CECTC/BBMP/KRIDL/W.No.12/WMM/AL/2014-15

Date : 03.03.2015

**ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-11**

Client : Asst. Executive Engineer, Shettyhalli Sub Division, BBMP, Bangalore.
Agency : Technical Manager(West), KRIDL, BBMP, Bangalore.
Name of Work : Improvements and Asphalting to Kaivaranarayana swamy Temple road at Kammagondanahalli in Shettyhall Ward No.12, BBMP, Bangalore.
Date of Testing : 03.03.2015
Material : Wet Mix Macadam
Sample Location : WMM Mix Plant

As per MORTH Table 400-11

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit	22.00	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

Note:

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3. Any Query regarding the report must be reported within 15 days from the date of testing.

For Civil Experts Consultants

Authorised Signatory

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಶಿಬ್ಬಕಟ್ಟೆ ಉಪವಿಭಾಗ, ದಾಸರಹಳ್ಳಿ ಮಲಯ
ಬ್ರಹ್ಮರಾಜ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಎಸ್.ಎಂ. ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು

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Job No.: CECTC/BBMP/KRIDL/W.No.12/WMM/AL/2014-15

Date: 03.03.2015

Aggregate Impact Value

IS: 2386 Part IV

Client	Asst. Executive Engineer, Shettyhalli Sub Division, BBMP, Bangalore.
Agency	Technical Manager(West), KRIDL, BBMP, Bangalore.
Name of the Work	Improvements and Asphaltting to Kaivaranarayana swamy Temple road at Kammagondanahalli in Shettyhall Ward No.12, BBMP, Bangalore.
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	03.03.2015

Sl No.	Details	Trial No.			Average
		1	2	3	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	361	363	366	22.75
2	Weight of aggregate passing 2.36 mm sieve after the test = W_2 g	80	83	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	281	280	281	
4	Aggregate Impact value = percent fines $100 * (W_2/W_1)\%$	22.16	22.87	23.22	

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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ಕೆ.ಎ.ಎಸ್. ಕಾರ್ಯಾಲಯ ಅಭಿಯಂತರರು
ಶಿಬಿರ ಕಟ್ಟಡ, ದಾಸರಹಳ್ಳಿ ಪುರಂ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಮಾ.ಎಂ. ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು

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Job No.: CECTC/BBMP/KRIDL/W.No.12/WMM/AL/2014-15

Date : 03.03.2015

**GRADATION FOR WMM
MORTH TABLE-400-11**

Client : Asst. Executive Engineer, Shettyhalli Sub Division, BBMP, Bangalore.

Agency : Technical Manager(West), KRIDL, BBMP, Bangalore.

Name of Work : Improvements and Asphaltting to Kaivaranarayana swamy Temple road at Kammagondanahalli in Shettyhall Ward No.12, BBMP, Bangalore.

Date of Testing : 03.03.2015

Material : Wet Mix Macadam

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): 12700

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	455	455	3.6	96.4	95-100
22.4	4320	4775	37.6	62.4	60-80
11.2	2650	7425	58.5	41.5	40-60
4.75	1705	9130	71.9	28.1	25-40
2.36	1250	10380	81.7	18.3	15-30
0.600	1160	11540	90.9	9.1	8-22
0.075	850	12390	97.6	2.4	0-8

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಪ್ರದಕ್ಷು ಉಪವಿಭಾಗ, ಜ್ಞಾನಕಟ್ಟು ಕಲಬುರಗಿ
ಬೃಹತ್ ಭೂಮಿ ಸುರಕ್ಷಾ ಸಂಸ್ಥೆ

NABL ACCREDITED AS PER ISO/IEC 17025:2005

Job No.: CECTC/BBMP/KRIDL/W.No.12/WMM/AL/2015-16

Date: 06.04.2015

TEST REPORT

Client	:	Asst. Executive Engineer , Shettyhalli Sub Division, BBMP, Bangalore.
Agency	:	Technical Manager(West) , KRIDL, BBMP, Bangalore.
Name of the work	:	Improvements and Asphaltting to Kaivaranarayana swamy Temple road at Kammagondanahalli in Shettyhall Ward No.12, BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Date of testing	:	06.04.2015

The results of the tests conducted on the bitumen sample using for Bituminous Macadam

Sl. No	Description	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 °C, 1/10 mm	68	60 to 70
2	Softening point, °C	52	Min. 45
3	Ductility at 27°C, cm	100 >	Min. 50
4	Flash Point, °C	304	Min. 220

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For Civil Experts Consultants

Authorised Signatory

AE-12
ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಶಿಬಿರಕಟ್ಟೆ ಉಪವಿಭಾಗ, ದಾಸರಹಳ್ಳಿ ವಲಯ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಎಸ್.ಎಂ. ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು

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Job No.: CECTC/BBMP/KRIDL/W.No.12/2015-16

06.04.2015

Aggregate Impact Value

IS: 2386 Part IV

Client	Asst. Executive Engineer, Shettyhalli Sub Division, BBMP, Bangalore.
Agency	Technical Manager(West), KRIDL, BBMP, Bangalore.
Name of the Work	Improvements and Asphaltting to Kaivaranarayana swamy Temple road at Kammagondanahalli in Shettyhall Ward No.12, BBMP, Bangalore.
Source / Location	Hotmix Plant, Bangalore
Type of Mix	Bituminous Macadam
Date of Testing	06.04.2015

Sl No.	Details	Trial No.			Average
		1	2	3	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	372	374	376	22.19
2	Weight of aggregate passing 2.36 mm sieve after the test = W_2 g	81	83	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	291	291	291	
4	Aggregate Impact value = percent fines	21.77	22.19	22.61	
	$100 * (W_2/W_1)\%$				

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Macadam is 30%

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AE-12
ನಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರು
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ಹೆಸ.ಎಂ. ರಸ್ತೆ, ದಕ್ಷಿಣಬೆಂಗಳೂರು, ಬೆಂಗಳೂರು

For Civil Experts Consultants

Authorised Signatory

Job No.: CECTC/BBMP/KRIDL/W.No.12/2015-16

Date: 06.04.2015

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	Asst. Executive Engineer, Shettyhalli Sub Division, BBMP, Bangalore.
Agency	Technical Manager(West), KRIDL, BBMP, Bangalore.
Name of Work	Improvements and Asphaltting to Kaivaranarayana swamy Temple road at Kammagondanahalli in Shettyhall Ward No.12, BBMP, Bangalore.
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Bituminious Macadam
Date of Testing	06.04.2015

Passing through IS Sieve, mm	Retained On IS Sieve, mm	Weight of Sieved Fraction (W) gms	Proportion of Size range in the sample, $X = \frac{100 \times W}{\Sigma W}$	Weight of pieces of aggregates of the range, (P) in gms	Thickness gauge size, mm	Weight of flaky particles (F) in gms	Percentage by Weight of flaky aggregates in gms $Y = \frac{100 \times F}{P}$	Weighted Percentage of flaky aggregates in gms $XY = X \times Y$	Weight of fraction consisting of at least 200 Pieces in gms	Length gauge size in mm	Weight of aggregates in each fraction retained on Length gauge in gms
63.00	50.00	W1	X1	P1	33.90	F1			P1	-	E1
50.00	40.00	W2	X2	P2	27.00	F2			P2	81.00	E2
40.00	31.50	W3	X3	P3	21.50	F3			P3	58.00	E3
31.50	25.00	W4	X4	P4	16.95	F4	12.3	416.64	P4	-	E4
25.00	20.00	W5	X5	P5	13.50	F5	10.96	265.68	P5	40.50	E5
20.00	16.00	W6	X6	P6	10.80	F6	12.57	203.54	P6	32.40	E6
16.00	12.50	W7	X7	P7	8.55	F7	15.38	204.20	P7	25.50	E7
12.50	10.00	W8	X8	P8	6.75	F8	22.08	190.16	P8	20.20	E8
10.00	6.30	W9	X9	P9	4.89	F9	25.00	91.79	P9	14.70	E9
		ΣW	9941.0				ΣXY	1372.00	ΣP	6249.0	ΣE
											691.0

Flakiness Index = 13.72%

Elongation Index = 11.06%

Result : Combined Flakiness & Elongation index 24.78%

Comments: Maximum allowable Combined flakiness and Elongation indices value for Bituminous Macadam is 35%.

Note:

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